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First we would like to thank Prof. Sucuoglu for his interest in our article and for giving us the opportunity to clarify some issues.

When measuring the damage potential of the capacity to cause damage of a strong motion, it is necessary to simultaneously consider its amplitude, duration and frequency content.[1–6] This seems to be commonly accepted. For this reason, we consider it as questionable Dr. Sucuoglu's statement that "Existence of a severe acceleration pulse in a ground motion record plays a dominant role in its damage potential, suppressing the importance of duration and frequency content. This characteristic is well represented by the peak ground velocity, V".

The peak acceleration provides information on the energy released in the high-frequency range, but it is not necessarily representative of that energy contained in the rest of the spectrum. A particular structure can be more affected by the acceleration associated to low or medium frequencies depending either on its main period or the duration of the shaking. In this way, one of the purpose of the article which is now under discussion has been to revise and to search for motion parameters which, if combined with the parameters mentioned previously, could well explain or represent the damage potential and thus improve the assessment of the damageability of a seismic excitation. Therefore, we tried to establish a methodology and to study not only the correlations with the macroseismic intensity but also correlations with the level of damage for different types of buildings.

The parameters used in this study arise as result of the integration along the records. They consider the amplitude and duration of the motion. The dependence of the frequency content can be introduced in these parameters through previous filtering of the records in selected bands of frequencies. Actually, our initial expectation was that of improving the correlation of the Arias Intensity (IA), by calculating such a parameter in several frequency bands. However, probably due to the lack of information on the periods of the affected structures, these filterings did not prove very efficient. Our choice of the proposed parameters instead of peak values such as pga and pgv is based on those considerations we have referred to. In addition, it is our intention to study parameters complementing these peak values, for which there already exist numerous correlations in the literature[7,8], despite the fact that some authors consider them theoretically and empirically more unstable.[1,9]

Regarding the regressions between instrumental and macroseismic parameters, in general, all correlations that exist in the literature show noticeable dispersions. Within these dispersion orders, the mathematical regression should not be the main criteria to choose any parameter as the most representative, especially when the observation sample is neither very wide nor homogeneous.

Finally, with regard to the comments on the Umbertide's record about pga and pgv low values being associated to a grade VI of intensity, we should make some remarks. On the one hand, we emphasize the ambiguity in the definition of this grade of the MSK scale that includes damages of different consideration, which is shown in a bigger dispersion of the values of motion parameters associated to this grade, as can be

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seen in our work. On the other hand, this observed fact can corroborate that pga and pgv parameters do not themselves explain the level of damage, which had been already noticed on those occasions where low values of these parameters have caused great damage and vice versa. This highlights the need to look for parameters that may take into account motion characteristics other than the amplitude, according to the study we have carried out.

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